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ABSTRACT

The ideas presented are ways in which teachers can incorporate environmental education into 5th grade general or slow learner curriculum. Objectives of the project were to provide the teacher with an aid in teaching about environment, and to help the student: 1) perceive and develop an awareness of the environment; 2) relate to his environment; 3) manipulate and change the environment; 4) realize that mathematics is a useful tool for studying environment; and, 5) conduct within the classroom experiments on environmental projects. A concept, objective, method, and evaluation is stated for each of the five major student objectives. The project classroom was self contained, and most of the work was field-oriented with very little student research or written work. It was concluded that changes of student attitudes occurred. Lists of supplemental methods are included which provoke high student interest, create good learning situations, and are possible on a limited budget. Related documents are: SO 002 611, SO 002 612, and SO 002 616. (Author/SJM)

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HUXLEY COLLEGE
CENTER FOR ENVIRONMENTAL EDUCATION

DEVELOPING ENVIRONMENTAL AWARENESS IN A FIFTH-GRADE CLASS OF "BELOW-AVERAGE" ACHIEVEMENT LEVEL

Dwight Hillier

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Sedro-Woolley Project Report No. 10
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Huxley College of Environmental Studies
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HUXLEY COLLEGE
Environmental Education Center

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Huxley College of Environmental Studies

TO THE TEACHER:

Presented here are ideas for multidisciplinary environmental education. The objectives of the ideas and methods suggested are clearly stated. The overall objective is to provide you, the teacher, with an aid in the development of your approach to teaching for and about the environment. These are not learning packages designed to be applied verbatim, but suggestions for ideas and methods that will enable you to develop learning packages. The contents of this report represent only the first treatment of the idea. It is published in this form in order that teachers may have an opportunity to experiment with it.

You will have to design your personal approach to environmental education. You are an environmental educator now, whether you realize it or not, because the environment is all around you and you are teaching about the environment that surrounds both you and your students. The state of the environment indicates that there is something wrong with the way in which you have learned to perceive and behave relative to the environment, and with the way you are teaching others to learn and behave in their environment today.

The ideas presented here are examples of ways in which you can incorporate environmentally beneficial learnings into your curriculum. The intent is not that you "add on" something specifically environmental to your curriculum, but that you incorporate environmental learnings into your treatments of the subject matter with which you have already been dealing. The specific manner in which you treat your responsibility to

educate for environmental stewardship is up to you. It is hoped that these and many other ideas will help you in your effort to understand the meaning of "environmental education" and its implications for you as a teacher and as a human organism.

The environmental education development project of which this report is a part is an ongoing one, and it is hoped that all who attempt to use the report will participate in the project by reporting the results of their efforts to the project staff. The staff will compile the ideas and methods collected. This will enable all working on the development of environmental education to share each other's work and will promote the spirit of cooperation essential to the success of any project as broad as this one.

Please report the methods and results derived from your use of this report to:

John Miles, Director
Environmental Education Project
Huxley College of Environmental
Studies
Bellingham, Washington 98225

Thank you.

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DEVELOPING ENVIRONMENTAL AWARENESS IN A FIFTH-GRADE CLASS OF "BELOW-AVERAGE" ACHIEVEMENT LEVEL

INTRODUCTION

Perhaps as an introduction I should state that these ideas were developed in the fifth grade, specifically at Central Elementary School in Sedro-Woolley, Washington. I was in my first year of teaching when I became a part of the Sedro-Woolley Environmental Education Project. I was a self-employed farmer for nearly twenty years before entering the teaching profession, and it was while farming that I developed my concern over environmental education. One doesn't really become aware of the dangers we face unless he has lived long enough in one area to see what has happened to gradually erode many environmental aspects of the community. Since the primary purpose of education is to teach people how to live, perhaps it is only fitting that what we call environmental education is now thought of by most informed people to mean an integrated and interdisciplinary program, rather than a separate section of the curriculum.

The initial aspect in the development of any environmental program must be the developing of one's perception and an awareness of his surroundings. Several of the exercises suggested in this paper are ideas to develop this perception. Nothing further can be done until we <u>really perceive</u> what we observe.

These ideas were used on a fifth-grade class of below-average achievement level. The class was self-contained in an old-fashioned style classroom in an outdated building. Since the reading level of the class was very low, most of the work was field-oriented and very little student research or written work was done. Thus it may be a difficult task to

document much of what was accomplished, but I believe that many changes of attitude took place. These changes of attitude in ourselves and in the children are the only real means we have to eventually accomplish our objectives.

Many changes of attitude took place during this year as far as my own educational philosophy is concerned. I no longer equate outdoor education with environmental education. During the field trips I took last fall I was more concerned about teaching my students tree and plant identification than ecological principles. I found that during the field trips I took in the spring I was only indirectly concerned with some of the technical details and was much more worried about effecting an increased environmental awareness.

It is unfortunate that it is necessary to write this report at this time. I believe that at least another year will be needed to implement many of the innovative ideas I've encountered. It will be necessary that more teachers become involved and perhaps then our goal of an integrated environmental curriculum may be realized.

PERCEPTION

Developing an Awareness of the Environment

Concept: A person needs to train himself to perceive the environment surrounding him.

Objective: By the use of a list the student has compiled, he will be able to enumerate many objects and occurrences effecting and affecting his surroundings.

Method: 1. Ask students to make up a list of everything they

can see, hear, feel, smell, or touch within the classroom itself, limiting the preparation time for the lists to approximately five minutes.

2. Have the students read their lists to the class.

3. Have class discussion on the different levels of perception of different people.

4. Discuss the need to train <u>all</u> of our senses to perceive our environment.

5. Repeat this exercise a few days later, noting improved performance.

Evaluation: When this experiment was first tried in my classroom, the students' primary perception was through sight. They would write that they could <u>see</u> rather than <u>hear</u> that someone was talking, etc. Other senses were similarly neglected. On a repeat exercise, the primary sense being utilized was still visual, but a considerable number of students became aware of factors affecting the other senses.

Alternate or Supplemental Method:

1. Ask the students to make notes of their observations while on a short walk (follow-the-leader style) as the teacher leads them up and down stairs, through doors, in and around objects on the playfield, etc. This outdoor activity should last 20 to 30 minutes.

2. Have the students read their observations to the class.

3. Compare different perceptions of different people.

4. Discuss the need to train all of our senses.

5. Ask questions to develop awareness, such as:

   - How many steps were there in a certain stairway?
   - What was the distance between certain objects on the playfield?
   - What color was a particular car that we circled several times on our tour?
   - How many panes of glass were in the windows?
   - Did you notice anything as we passed the kitchen?
   - What do you think we are having for lunch?
   - How high was the sun?
   - Was it warm or cold?

6. Repeat this exercise at least once (preferably several times) over a period of several weeks.

Evaluation of Supplemental Method:

The first time this activity is tried, it will probably be rather unsuccessful. Each time we repeated the exercise, more notes were made and perception became much more acute. In fact, some students began to perceive things that I failed to notice myself.

Using an Awareness of the Environment

Concept: A person who has trained his perceptual senses is better able to relate to his environment.

Objective: By the use of a freehand sketching exercise, the student will demonstrate his perception of his environment.

Method: 1. If possible, go outdoors where a more inspiring scene is present than the one in the classroom.

2. Have students draw anything that they wish. Suggest mountains, trees, flowers, etc.

3. Have students hang their completed pictures in the classroom so their friends can see what they have drawn.

4. Discuss perception demonstrated by the students.

Evaluation: Some students show a real "feel" for their environment while others look past many things of natural beauty and draw square buildings, race cars, etc., or other objects from their imaginations. Of couse, this proves again that we all have different ideas of what beauty and true worth really is. This in itself is a good lesson to learn and only proves that values must be changed if we are to effect any real changes in attitudes.

Alternate or Supplemental Method:

1. Hang up pictures showing scenes from nature such as trees, stumps, snow, mountains, rivers, etc.

2. Have students write a short essay on what they perceive from their chosen drawing.

3. Allow students to use their imaginations and to draw artistic expressions from this internal source.

4. Pick out several essays and read them to the class, noting where good perceptual awareness was used.

Evaluation of Supplemental Method:

This exercise can best be used where one has students who have learned to express themselves well through written work. In my case, this exercise didn't work too well because of literary under-achievement.

However, it could be adapted to some type of oral exercise where the student not adept at written work would be able to express himself much better.

MAN-MADE ENVIRONMENTAL CHANGES

Concept: Man has the ability to manipulate and change the environment.

Objective: 1. At the conclusion of the exercise, the student will demonstrate his knowledge that noise factors influence his ability to concentrate on his lesson, using class discussion as a vehicle.

2. To show that high noise levels or divergent sounds create an unfavorable environment.

3. To show that lack of light has an immediate influence on one's ability to do his assigned work properly.

Method: 1. During a silent reading period, have one student play a phonograph softly in the back of the room.

2. Gradually turn up the volume until the effect is noticed.

3. Have another student play a different phonograph with a different record in front of the room while the other record is still being played in the back.

4. Change record speeds to cause discordant sounds (a 33 rpm record on 78 or 45 speed, for example).

5. As students begin to complain, make note of the fact that such sounds do affect our ability to concentrate. This is a good point at which to digress and emphasize how noise levels affect people's efficiency and production.

6. Turn off all records and return to normal silent reading period.

7. Suddenly turn off all the lights. (This is especially good on a dark day.) Note the immediate effect. This is a good time to discuss the need of proper lighting and the influence of light on all living things.

8. On a hot, stuffy day, forget to turn down the heat or to open the windows. Note the gradually decreasing student efficiency. This experiment provides a good opportunity to discuss this effect on one's environment.

Evaluation: The class didn't get much reading done, but significant learning occurred. The experiment, showing the effect of environmental conditions on the individual, was very effective. Many unsolicited promises to be more quiet in the future were given as the students, perhaps for the first time, actually realized the detrimental effects of high noise levels.

Alternate or Supplemental Method:

1. Pick a time when the students are very "high" and are all clamoring at once for attention.

2. Discuss the phenomenon of noise communication interference.

   a. When everybody talks at once, nobody can hear and no communication can take place.

   b. Why talk if nobody can communicate?

3. Divergent noise levels are very distracting to class. Ask class if it isn't much better to cooperate and "take turns" when asking questions or expressing opinions.

4. Relate this class experience to "noise pollution" of our environment in our communities.

Evaluation of Supplemental Method:

This usually works for a short period, but human nature being what it is, most people forget and are selfish to the point that they want to be "first" regardless of whom they have to overpower. Once again, this experience demonstrates that changes of attitude are needed to achieve any permanent improvement in behavior; it also provides a good opportunity to discuss the concept "selfishness" and related ideas.

TEACHING MATHEMATICS OUTSIDE THE CLASSROOM

Concept: Mathematics is a tool usable in studying an environment.

Objective: The student will demonstrate his knowledge of drawing objects to scale by mapping an area of the school playfield.

Method: 1. Pick a convenient part or unit of the school play area, and have each student measure his "stride" (average step length measured in inches).

2. Each student will make notes of distances around an area; i.e., distances between objects, location of

objects in relation to the whole, etc., by counting the number of his strides.

3. Demonstrate how to convert strides to a workable scale figure, such as one stride equals one inch. (Superior students will be able to master the conversion of strides into an exact scale; e.g., one inch equals three feet.)

4. Convert figures to a scale map drawn by each student. Students will quickly notice if their scale is wrong because objects will not appear in their proper perspective.

5. Explain other readily available "instant measuring devices," such as the span of the outstretched hand (distance between thumb and little finger) or the distance between the tips of the outstretched arms.

Evaluation: This activity is difficult to get started, but class enthusiasm grows rapidly as the idea takes hold. Students are also interested in being able to estimate distances accurately without using actual rulers or yardsticks. Concepts of inches, feet, and yards are much more relevant when they can be readily observed and used.

CLASSROOM EXPERIMENTS AND PROJECTS

Experiment on Soil Types and Plant Growth

Concept: A plant is directly affected by its environment, especially in relation to the type of soil in which it is planted.

Objective: The student will be able to show, by actual example, that type of soil has a direct influence on plant development and growth.

Method: 1. Select four types of soil. These can be brought to school by the students, by the teacher, or preferably by the teacher and a team of students getting actual soil samples from actual field locations. Suggested types of soil are: sand; sandy loam; silty or clay loam; humus, or soil rich in organic matter.

2. Have students obtain half-pint milk cartons from the school kitchen and cut off the tops. These make ideal containers for planting. Mark and label the soil type used in each one.

3. Plant beans or other fast growing plants in each carton, with each student to be in charge of his own set of plants.

4. Make daily observations and note the differences in growth rates, plant vigor, etc.

5. Relate this experience to actual field conditions. This is a perfect time to mention the effect of man on his environment. Ask questions such as:

- What are we using our land for?
- Why do we always seem to use our best soil for building houses and freeways?
- What can we grow on cement?
- Where is our food going to come from in the future?

Evaluation: Truth hits home fast! Usually very dramatic results can be shown by this experiment, and it provides a good learning situation. Students often begin to question some aspects of our value system. Do we really need all those freeways right through our best land?

An Environmental Project That Can Be Done Anywhere and That Costs Nothing

Concept: Your environment is right in front of you--just waiting to be investigated.

Objective: At the conclusion of this term project, the student will be able to demonstrate his increased perception and awareness of his surroundings by having drawn a series of maps or sketches showing changes which have occurred in a particular area during the year.

Method:

1. Select an area approximately four blocks square surrounding the school.
2. Taking each block or section in turn, walk around the area slowly while students make sketches or notes.
3. Have the students transfer their sketches or notes to large student-designed maps which will be placed on the schoolroom walls. It is suggested that students be divided into groups of four or five for each map.
4. Several times during the year, repeat the series of short walks around the area, having the students note the changes which are occurring as climate and weather (and other factors) affect the environment.

5. Have each team make changes on their maps as these changes occur.

6. Have periodic class discussions and ask questions such as:

- Why are utility lines where they are?
- Where are water lines, sewers, and fire hydrants located, and why?
- Why are houses located where they are?
- Why are there differences between houses in the same area?

Evaluation: The students are really excited to start a project such as this, but gradually lose some of their enthusiasm as the year progresses because of other interests, such as sports, etc. The real benefits come in learning to work as a team and in learning to make long-range plans. A project such as this can be used as a basis for many other parts of the curriculum. For example:

- Science: for nature study, the study of electricity, geological studies.
- Mathematics: measuring distances, fractions, fractional parts of an area, number of houses per unit, etc.
- Language arts: Research for written reports, writing and reading such reports, oral discussions.
- Social studies: Types of communities, locations of communities, resources.

Supplemental Activities:

1. Branch out farther into the community, using the same type of approach.

2. Divide the class into teams and have outside specialists on such subjects as water and sewer lines, utility

lines, or governmental units and agencies work with each group.

3. Take short field trips to surrounding areas. These can be within walking distance in most cases. Also take trips to further investigate and complement learning going on through group assignments.

4. Take short bicycle trips, if possible, to points of interest within your area. (This is a very popular activity with students.)

Evaluation of Supplemental Activities:

These supplemental activities provoke very high student interest, are good learning situations, and are all possible on a very limited or nonexistent school budget. This latter prospect may become very important if present economic conditions continue, and is a good argument to use in situations where some hesitation exists in starting programs in environmental education.

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